

March 2001

**THE CONFEDERATED TRIBES OF THE WARM SPRINGS
RESERVATION OF OREGON JOHN DAY BASIN OFFICE
FY 1999 WATERSHED RESTORATION PROJECTS**

Annual Report 1999



DOE/BP-00000492-2



This report was funded by the Bonneville Power Administration (BPA), U.S. Department of Energy, as part of BPA's program to protect, mitigate, and enhance fish and wildlife affected by the development and operation of hydroelectric facilities on the Columbia River and its tributaries. The views of this report are the author's and do not necessarily represent the views of BPA.

This document should be cited as follows:

Robertson, Shawn - The Confederated Tribes of the Warm Springs Reservation, The Confederated Tribes of the Warm Springs Reservation of Oregon John Day Basin Office FY 1999 Watershed Restoration Projects, Annual Report, Report to Bonneville Power Administration, Contract No. 00000492, Project No. 199801800, 31 electronic pages (BPA Report DOE/BP-00000492-2)

This report and other BPA Fish and Wildlife Publications are available on the Internet at:

<http://www.efw.bpa.gov/cgi-bin/efw/FW/publications.cgi>

For other information on electronic documents or other printed media, contact or write to:

Bonneville Power Administration
Environment, Fish and Wildlife Division
P.O. Box 3621
905 N.E. 11th Avenue
Portland, OR 97208-3621

Please include title, author, and DOE/BP number in the request.



The Confederated Tribes of the Warm Springs Reservation of Oregon

John Day Basin Office

FY 1999 Watershed Restoration Projects

Annual Report

Prepared by:

Shaun W. Robertson
Confederated Tribes of Warm Springs
John Day Basin Office

Prepared for:

U.S. Department of Energy
Bonneville Power Administration
Environment, Fish and Wildlife Division

Project Number: 98-018-00

Contract Number: 98BI-09782

12 March 2001

Table of Contents

TABLE OF CONTENTS	II
TABLE OF FIGURES	III
TABLE OF PHOTOS	III
ABSTRACT	IV
PROJECT DESCRIPTIONS	I
PROJECT: CROWN RANCH/MCNEIL RETURN FLOW COOLING #1 NORTH	I
PROJECT: INDIAN CREEK DIVERSION	3
PROJECT: SOUTHSIDE DITCH DIVERSION (PHASE I)	5
PROJECT: COURCHESNE INFILTRATION GALLERY	7
PROJECT: KEERINS DIVERSION	10
PROJECT: UPPER BASIN COTTONWOOD RESERVES DEMONSTRATION	12
PROJECT: SEASONAL CORRIDOR FENCING	13
PROJECT: BEAVER MANAGEMENT PROGRAM	14
PROJECT: STREAM GAUGE OPERATIONS	17
PROJECT: MONUMENT NATIVE PLANT NURSERY	18
PROJECT: 1999 MONITORING EFFORT	19

Table of Figures

Figure 1. John Day Basin Map	v
Figure 2. Mainstem Project Location Map.....	vi
Figure 3. Middle Fork Project Location Map	vii
Figure 4. South Fork Project Location Map	viii

Table of Photos

Photo 1. Crown Ranch Irrigation Return Ditch (pre-project).....	1
Photo 2. Crown Ranch irrigation return flow system showing water control station (post-project).....	1
Photo 3. Crown Ranch return flow outlet (post-project)	2
Photo 4. Indian Creek diversion (pre-project).....	3
Photo 5. Indian Creek diversion (post-project).....	3
Photo 6. Indian Creek diversion turnout box	4
Photo 7. Indian Creek diversion turnout box with headgate	4
Photo 8. Typical gravel push-up diversion in the John Day basin	6
Photo 9. Typical pump station in the John Day basin	6
Photo 10. Infiltration gallery well screens being placed in an excavated trench below the streambed..	7
Photo 11. Well screens being installed beneath streambed	8
Photo 12. Manifold attached to well screens	8
Photo 13. Upright risers attached to well screen manifold	9
Photo 14. Typical infiltration gallery following installation. The well screens are not visible below the streambed. The upright CMP pipe houses the water control and backflushing valves.	9
Photo 15. Keerins diversion prior to project construction.	10
Photo 16. Keerins diversion following project installation. Flashboards have been installed for illustration purposes, although under most stream flow conditions they are unnecessary since the bottom of the headgate and the bottom of the diversion structure are on level with the bottom of the stream.....	10
Photo 17. Keerins diversion showing installation of layflat stanchions and flashboards. Middle of stream is fishway notch.	11
Photo 18. Cottonwood stand in the John Day basin	12
Photo 19. Rosebud Creek, a tributary of the South Fork John Day River, showing installation of the temporary electric fence	13
Photo 20 . Basin Creek on the J-Dot Ranch. Beaver reintroduction site prior to release.....	14
Photo 21. Beaver being released on Basin Creek	14
Photo 22 . Water leveling device on the T.G. Brown Ranch, South Fork of the John Day River. The PVC pipes keep the stream flow at a constant level, keeping water from flowing out across hay meadows.....	15
Photo 23 . Basin Creek on the J-Dot Ranch. Beaver reintroduction site showing impounding of water and enhanced willow growth following release.	15
Photo 24 . Beaver pond on the T.G. Brown Ranch, South Fork of the John Day River.....	16
Photo 25. A stream gauging station in the John Day basin.	17
Photo 26. The plant nursery at Monument, Oregon. Maintained by the Monument Soil and Water Conservation District and North Fork Watershed Council.....	18
Photo 27. The Oregon Youth Conservation Corp and Jack Cavender, chairman of the Monument Soil and Water Conservation District at the Monument Nursery	18
Photo 28. A redband trout (<i>O. mykiss</i>) tagged with both a Floy® Anchor Tag (under dorsal fin) and a VI Alphanumeric tag (in perocular tissue behind eye).....	19
Photo 29. Conducting snorkel surveys on the South Fork John Day River (St. Clair Ranch).....	20

Abstract

The John Day River is the second longest free-flowing river in the contiguous United States and one of the few major subbasins in the Columbia River basin containing entirely unsupplemented runs of anadromous fish. Located in eastern Oregon, the basin drains over 8,000 square miles, the fourth largest drainage area in Oregon. With its beginning in the Strawberry Mountains near the town of Prairie City, the John Day flows 284 miles in a northwesterly direction, entering the Columbia River approximately four miles upstream of the John Day dam. With wild runs of spring chinook salmon and summer steelhead, red band, westslope cutthroat, and redband trout, the John Day system is truly one of national significance.

The entire John Day basin was granted to the Federal government in 1855 by the Confederated Tribes of the Warm Springs Reservation of Oregon (Tribes). In 1997, the Tribes established an office in the basin to coordinate restoration projects, monitoring, planning and other watershed activities on private and public lands. Once established, the John Day Basin Office (JDBO) initiated contracting the majority of its construction implementation actions with the Grant Soil and Water Conservation District (GSWCD), also located in the town of John Day.

The GSWCD completes the landowner contact, preliminary planning, engineering design, permitting, construction contracting, and construction implementation phases of the projects. The JDBO completes the planning, grant solicitation/defense, environmental compliance, administrative contracting, monitoring, and reporting portion of the program. Most phases of project planning, implementation, and monitoring are coordinated with the private landowners and basin agencies, such as the Oregon Department of Fish and Wildlife and Oregon Water Resources Department.

In 1999, the JDBO and GSWCD proposed continuation of a successful partnership between the two agencies and basin landowners to implement an additional eleven (11) watershed conservation projects. The types of projects implemented included installation of infiltration galleries, permanent diversions, pumping stations, and irrigation efficiency upgrades.

Project costs in 1999 totaled \$284,514.00 with a total amount of \$141,628.00 (50%) provided by the Bonneville Power Administration (BPA) and the remainder coming from other sources such as the Bureau of Reclamation (BOR), Confederated Tribes of Warm Springs, Oregon Watershed Enhancement Board, and individual landowners.

Figure 1. John Day Basin Map

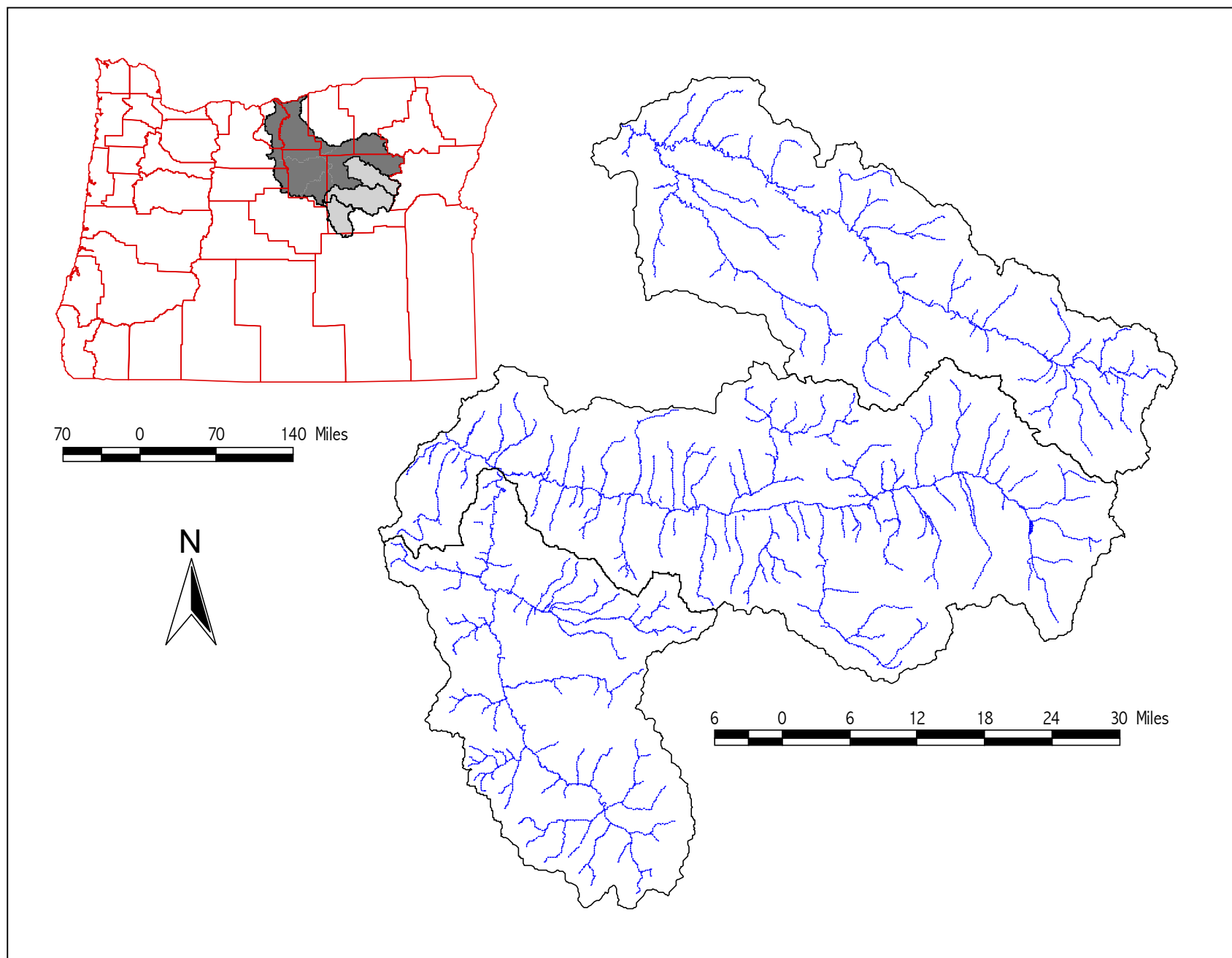


Figure 2. Mainstem Project Location Map

**1999 Watershed Restoration Projects
Confederated Tribes of Warm Springs -- John Day Basin Office
Bonneville Power Administration**

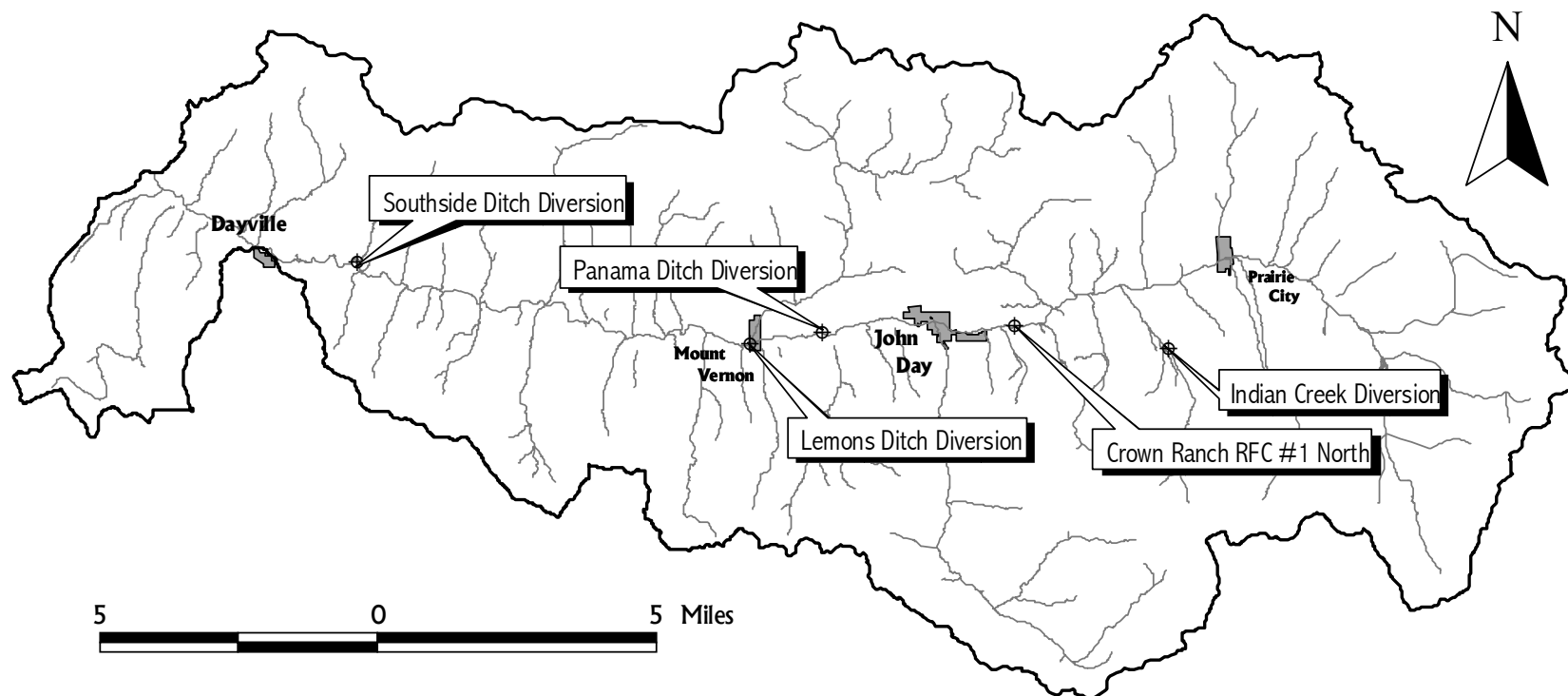


Figure 3. Middle Fork Project Location Map

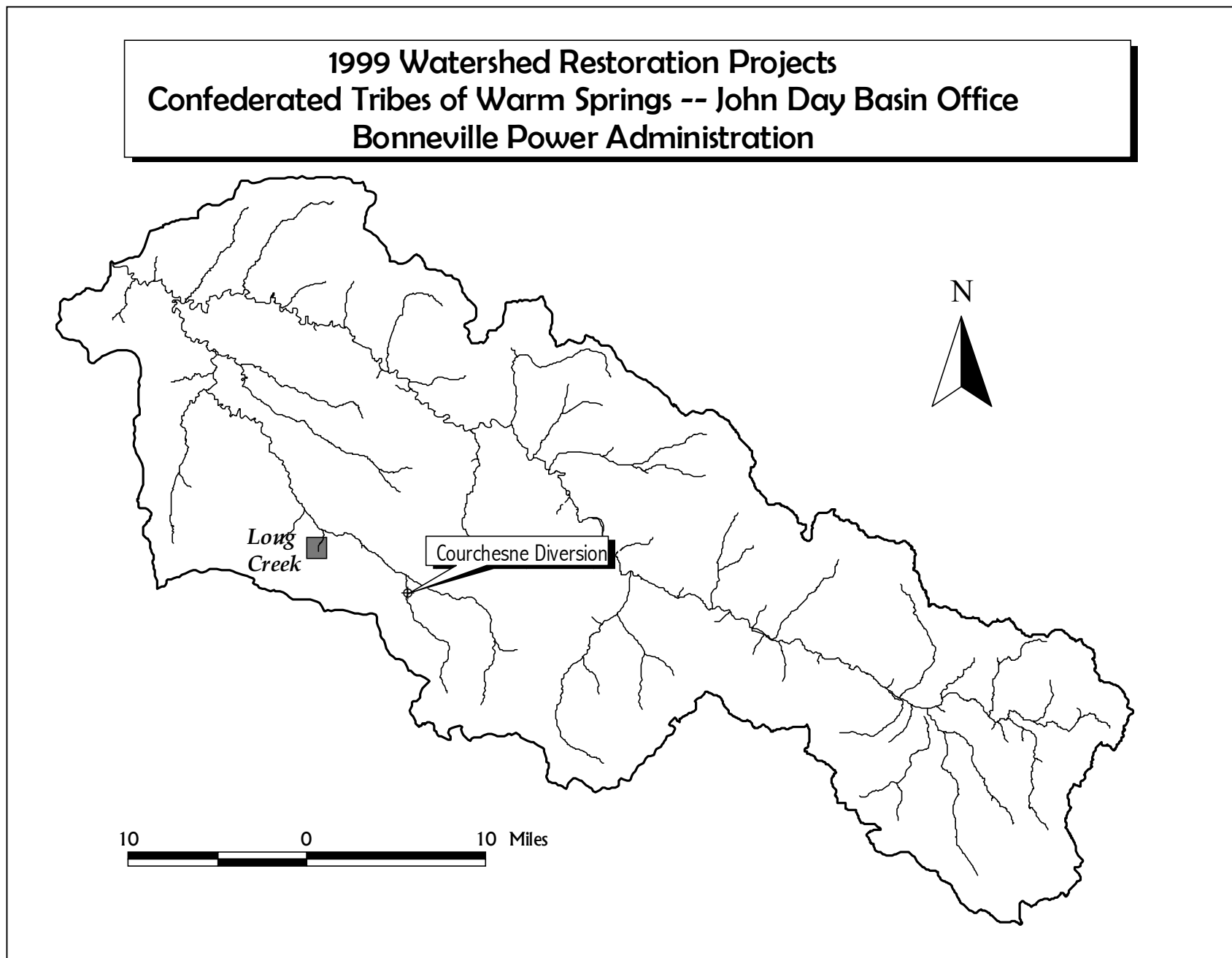
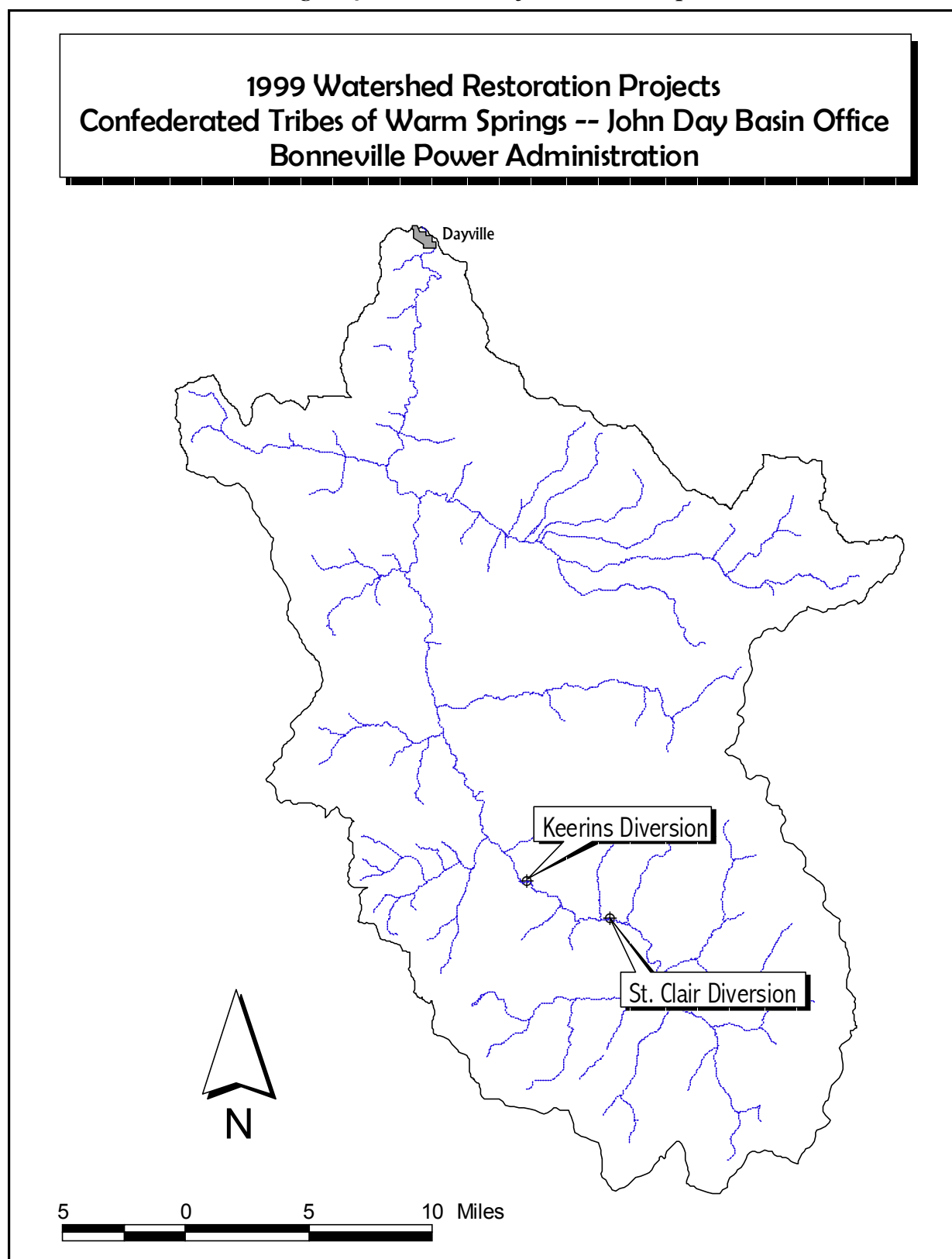


Figure 4. South Fork Project Location Map



Project Descriptions

PROJECT: CROWN RANCH/MCNEIL RETURN FLOW COOLING #1 NORTH



Photo 1. Crown Ranch Irrigation Return Ditch (pre-project)

Project Background: This project was originally proposed as the Crown Ranch RFC #1 North project. During project planning, an adjacent (downstream) landowner, the McNeil Ranch, requested that the project be expanded to incorporate the return flow ditches on their property. Since the expanded scope would provide significant resource benefits, we requested additional funds from the BPA (from the 10% contingency) to complete the McNeil portion of the Crown Ranch RFC project. This addition doubled the scope of the project and provides additional resource benefits from increasing the amount of high quality water returning to the river.

Water from the John Day River is used to irrigate hay meadows north of the river on the Crown and McNeil ranches. Used irrigation water historically was collected from the fields and returned to the river in open ditches. The quality of return flow water was seriously degraded as it was exposed to direct sunlight, bare soil, and nutrients (animal waste) from the fields. When this water was returned to the river, it typically contributes to water quality degradation in the river.

The project replaced the open ditches with perforated PVC pipe. The pipes collect return flows below ground and transport this water to the river directly, thereby eliminating thermal and nutrient increases. In addition, installation of a valve station allows for regulation of the local water table to enhance forage production and the extent of return flows. Our experience and monitoring of prior similar projects, shows a remarkable increase in water quality of return flows and improvements in localized water quality in the river water column.

The project area is located within migratory and rearing habitat for spring Chinook and steelhead and migratory and overwintering habitat for bull trout and westslope cutthroat. Past efforts on the Crown and McNeil ranches have focused on improvements in riparian and instream habitat including: 1) placement of instream structures; 2) a full riparian corridor fence excluding domestic livestock grazing; and 3) upgrading irrigation diversion structures at two diversion points. In addition, in 1996, a similar return flow cooling project was installed on the Crown Ranch

Photo 2. Crown Ranch irrigation return flow system showing water control station (post-project)



on a field south of the current project.

The property immediately above the project boundary, the Holliday Ranch, has had numerous return flow cooling projects installed as well as a riparian corridor fences and instream habitat projects. The property immediately below the McNeil Ranch, the Holmstrom Ranch, has had prior instream habitat and riparian fencing projects.

Project Objective: Return irrigation return flows to the river cooler than current condition.



Photo 3. Crown Ranch return flow outlet (post-project)

Project Description:

1. Install perforated pipe over the project area to replace open ditches.
2. Install a valve station at the drain confluence with the river to allow adjustment of the local water table as necessary.
3. Install a safety screen over the outlet pipe to preclude entrainment of wildlife.
4. Place riprap around the outlet pipe to prevent streambank and bed erosion.
5. Shape all construction spoils as appropriate to reduce erosion and to promote rapid vegetative recovery.
6. Rebuild the existing riparian corridor fence around the construction area, as necessary.

Project Monitoring:

Monitoring Objective: Determine the difference between pre- and post-project return flow temperatures. Evaluate river temperatures above the return flow outlet.

Monitoring Completed:

1. Permanent photopoint locations have been installed and pre- and post-project photographs have been taken.
2. Thermal loggers were installed in the return flow ditch (at midpoint and outlet) and in the river immediately above the return flow outlet. Temperatures were taken every hour from June to October in 2000.

Project Cost:	Local Cost Share	21,590.00	(39%)
	BPA Contribution	33,344.00	(61%)
	TOTAL	\$ 54,934.00	

Start Date: 31 October 2000 Completion Date: 15 December 2000

PROJECT: INDIAN CREEK DIVERSION**Photo 4. Indian Creek diversion (pre-project)**

Project Background: Indian Creek water was historically diverted into two open ditches by constructing gravel dikes across the creek. The temporary gravel berms were reconstructed annually (near the beginning of the irrigation season), and as required during the irrigation season as river flows declined. In addition to the effects of construction on the stream channel and riparian area, depending upon river flow conditions the diversions created partial to total barriers to migrating fish. These migratory barriers can become a problem at various times during the year as follows:

- 1) if stream flows are low in the spring and the push-up diversion is not “blown out”¹ or removed, a passage impediment can be created for adults migrating upstream to spawning areas;
- 2) when water temperatures in the mainstem and lower reaches of the tributaries cool in the fall, large numbers of rearing juveniles and stream resident adults outmigrate to overwintering areas. If diversions remain in place, they can become an impediment for outmigrants to move to more productive overwintering habitat areas;
- 3) if diversions are not blown out or removed in the spring prior to smolt outmigration they may become an impediment to smolt migration or entrain smolts; and
- 4) as summer water temperatures create uncondusive conditions in the mainstem and lower reaches of rearing tributaries, juveniles and stream resident adults must migrate to areas of

Photo 5. Indian Creek diversion (post-project)

¹ There is no requirement, and because of damage resulting from instream construction—little desire, to remove gravel push-up diversions following the irrigation season. However, if spring flows are insufficient to “blow out” the diversion, the structure often remains in place throughout the year.



Photo 6. Indian Creek diversion turnout box

to be rebuilt the following irrigation season. Spring washout typically scours the disturbed construction areas surrounding the dikes leading to bank instability, loss of riparian vegetation, and an incised stream channel. The process of periodic and annual dike reconstruction, as well as annual scouring of the stream channel, leads to a gradual lowering of the streambed and causes diversion points to continually be moved upstream, leading to additional disturbed stream areas. Construction and reconstruction is typically accomplished using heavy equipment within the stream margin, increasing the possibility of chemical contamination of the water column.

The project was proposed to create a permanent, efficient, and low maintenance diversion system that maintains unrestricted fish passage at all stream water levels and one that reduced or eliminated annual impacts to aquatic and terrestrial resources. Elimination of the gravel diversion dams would preclude annual and periodic reconstruction of the dams and allow restoration of stream channel and bank structure. Annual sediment inputs and streambed/streambank degradation that resulted from previous instream diversion construction and reconstruction would be eliminated leading to additional channel

better water quality. If push-up diversions are installed prior to this migration (about the 1st of July) they can prohibit migration to upstream rearing areas.

Material for the dikes was excavated from the riverbed and the temporary rock berms were left in place following the end of the irrigation season. Subsequent high flows generally washed the dikes away causing it



Photo 7. Indian Creek diversion turnout box with headgate

stability. Eliminating scavenging of dike materials from the adjacent riverbank would allow recovery of riparian vegetation and function. Construction of a permanent diversion also provides for diversion of water to legal rate and duty at all stream flow conditions.

The diversion is located within spawning and rearing habitat for summer steelhead and redband trout. A known population of bull trout is approximately two miles upstream of the diversion site and the project area may contain overwintering or migratory habitat for adult fluvial bull trout. The ranch immediately downstream of the project area has a full corridor riparian exclusion fence installed in 1998.

Project Objective: Eliminate two fish passage impediments, improve bank/streambed stability, and improve riparian condition by replacing two gravel push-up diversions on Indian Creek.

Project Description:

1. Install a permanent concrete and rock diversion structure at the existing ditch head, which is the legal point of diversion.
2. Construct a concrete turnout box and spillway, incorporating a trash screen to protect the turnout box, a headgate for water regulation, and a water measuring weir as appropriate.
3. Install layflat stanchions in the spillway to allow for placement of flashboards that regulate the impounded water level during the irrigation season.
4. Place riprap in conjunction with sheet steel piling in the bed of the river on grade relative to the point of diversion to ensure flow over the fishway under all normally occurring river levels.
5. Incorporate the existing hydraulically powered fish wheel into the diversion system.
6. Stabilize the east and west banks of the stream as necessary with riprap to protect the installation and shape the construction spoils on both banks.

Project Monitoring:

Monitoring Objective: Document the change between pre- and post-project area condition.

Monitoring Completed:

1. Permanent photopoint locations have been installed and pre- and post-project photographs have been taken.

Project Cost:	Local Cost Share	46,186.00	(74%)
	BPA Contribution	16,261.00	(26%)
	TOTAL	\$ 62,447.00	

Start Date: 07 September 2000

Completion Date: 22 September 2000

PROJECT: SOUTHSIDE DITCH DIVERSION (PHASE I)

Project Background: See description of the Indian Creek diversion for a complete discussion of gravel push-up diversions, their construction, and impacts. The Southside Diversion project was initially planned as a replacement of a single gravel push-up diversion with a permanent diversion structure, similar to the Indian Creek diversion. However, following initial project identification, the two properties served by the Southside Ditch were sold. One of the new owners requested that the project be modified to a pump station rather than a permanent diversion. The other owner served by the ditch would not have been able to receive his water right in the ditch if the water rights for the first owner were transferred to a pump. Consequently, we approached the downstream landowner and proposed to replace his irrigation diversion system with a pumping station, thereby eliminating the original diversion entirely and the complete open ditch. This was intended to reduce water losses in the open conveyance system and improve field application efficiency.



Photo 8. Typical gravel push-up diversion in the John Day basin

Since the costs of installing two pumps was higher than replacing the original diversion, we requested additional funds from the BPA, from the 10% contingency, and the Oregon Watershed Enhancement Board, while splitting the project into two phases. Phase I treated the irrigation system for the upstream landowner and Phase II will complete the project by treating the downstream system.

Pumping stations are promoted in the John Day basin as a replacement option for gravel push-up

diversions. They differ from permanent diversions and infiltration galleries in that the collection system consists of a pump, on a pump pad, with a suction nozzle extending into the water column. Generally, the pump is placed in a natural pool in the river, although sometimes a small diversion structure is needed to pool water to a sufficient height to be pumped to a conveyance system.

The Southside diversion is located on the John Day River, within migratory and potential overwintering habitat for summer steelhead, redband trout, and spring Chinook salmon.

Project Objective:

Eliminate a fish passage impediment, improve bank/streambed stability, and improve riparian condition by replacing a gravel push-up diversion on the John Day River.

Project

Description:

1. Install one 7.5 HP low pressure pump to provide irrigation water to approximately 62 acres.

Photo 9. Typical pump station in the John Day basin



2. Install NMFS approved fish screen on pump suction.
3. Install approximately 240 feet of 8-inch PVC from pump to existing open delivery system.
4. Shape and stabilize the disturbed streambank. Repair existing riprap by adding 5-cubic yards of riprap grade rock.
5. Seed disturbed areas.

Project Monitoring:

Monitoring Objective: Assess changes between pre- and post-project area condition.

Monitoring Completed:

1. Permanent photopoint locations have been installed and pre- and post-project photographs have been taken.

Project Cost:	Local Cost Share	6,336.00	(20%)
	BPA Contribution	25,344.00	(80%)
	TOTAL	\$ 31,680.00	

Start Date: 1 December 1999

Completion Date: 1 August 2000

PROJECT: COURCHESNE INFILTRATION GALLERY


Photo 10. Infiltration gallery well screens being placed in an excavated trench below the streambed

Project Background:

See description of the Indian Creek diversion for background information on gravel push-up dams and their effects.

Infiltration galleries are promoted in the John Day basin as a replacement option for gravel push-up diversions. They differ from permanent diversions and pumping stations in that the collection system consists of well screens buried below the surface of the streambed. Water collected in the well screens is then gravity fed or pumped to a distribution and conveyance system. No

structure is located within the stream channel, although a water control valve and bypass is located off-channel, buried beneath the streambank or riparian area.



Photo 11. Well screens being installed beneath streambed

and clean the bedding material.

The lack of any instream structures assures fish passage at all water levels, while ensuring irrigation diversions to legal rate and duty. While infiltration galleries are likely the least impacting of any diversion type, their applicability is limited by stream geomorphology and stream flow.

The Courhesne Diversion is located within spawning and rearing habitat for steelhead and redband trout. Past project efforts on this ranch have resulted in a full riparian corridor fence and instream habitat improvements.

Project Objective: Improve water quality and fish habitat and eliminate a fish passage barrier to anadromous and resident fish in a tributary to the John Day River.

Photo 12. Manifold attached to well screens





Photo 13. Upright risers attached to well screen manifold

promote rapid vegetative recovery.

Project Monitoring:

Monitoring Objective: Assess changes between pre- and post-project condition.

Monitoring Completed:

1. Permanent photopoint locations have been installed and pre- and post-project photographs have been taken.

Project Description:

1. Excavate for and install the buried well screens underneath the creek.
2. Install a shutoff valve and riser to allow backflushing the system.
3. Install PVC conveyance pipe.
4. Place riprap on the streambank to assure erosion will not damage the gallery or bypass the collection system.
5. Stabilize the west bank of the stream as necessary with riprap to protect the installation and shape spoils on both banks.
6. Shape all construction spoils as appropriate to reduce erosion and to

Photo 14. Typical infiltration gallery following installation. The well screens are not visible below the streambed. The upright CMP pipe houses the water control and backflushing valves.



Project Cost:	Local Cost Share	19,483.00	(62%)
	BPA Contribution	11,829.00	(48%)
	TOTAL	\$ 31,312.00	

Start Date: 1 September 1999Completion Date: 28 September 1999

PROJECT: KEERINS DIVERSION**Photo 15. Keerins diversion prior to project construction.**

Project Background: See description of the Indian Creek diversion for background information on gravel push-up dams and their effects. The Keerins Diversion is located on the South Fork John Day River within spawning and rearing habitat for resident fish and above spawning and rearing habitat for summer steelhead and spring Chinook salmon.

Project Objective: Improve water quality and fish habitat and eliminate a fish passage impediment for resident fish in the South Fork John Day River.

Project Description:

1. Install a permanent concrete, steel, and rock diversion structure at the existing ditch head, which is the legal point of diversion.
2. Construct a headgate for water regulation and install a water measuring weir.
3. Install layflat stanchions in the spillway to allow for placement of flashboards that regulate the impounded water level during the irrigation season.

Photo 16. Keerins diversion following project installation. Flashboards have been installed for illustration purposes, although under most stream flow conditions they are unnecessary since the bottom of the headgate and the bottom of the diversion structure are on level with the bottom of the stream.



4. Place riprap in conjunction with sheet steel piling in the bed of the river on grade relative to the point of diversion to ensure flow over the fishway under all normally occurring river levels.
5. Stabilize the east and west banks of the stream as necessary with riprap to protect the installation and shape the construction spoils on both banks.

Project Monitoring:

Monitoring Objective: Assess changes in pre- and post-project condition.

Monitoring Completed:

1. Permanent photopoint locations have been installed and pre- and post-project photographs have been taken.

Project Cost:	Local Cost Share	14,620.00	(40%)
	BPA Contribution	22,000.00	(60%)
	TOTAL	\$ 36,620.00	

Start Date: 1 September 1998

Completion Date: 9 September 1999

Photo 17. Keerins diversion showing installation of layflat stanchions and flashboards. Middle of stream is fishway notch.



Photo Note:
As boards are placed horizontally upstream of the lay-flat stanchions (A), the water level behind the diversion structure, as well as through the fishway (B), is raised. Fish passage and diversion of irrigation water to legal rate and duty is assured at all flow levels.

PROJECT: UPPER BASIN COTTONWOOD RESERVES DEMONSTRATION

**Photo 18. Cottonwood stand in the John Day basin**

Project Background: Nursery stock used in restoration projects is currently secured from regional sources and a single local source—the Monument Nursery.

Although the Monument Nursery is an excellent source for plant materials, trees and shrubs are often unsuitable for replanting in certain areas of the basin. For example, due to the lower elevation at Monument, trees oftentimes “break bud” too early for planting at higher elevations. Further, due to the lack of reliably available tree-cooler space in Grant County, tree survival may be detrimentally affected by planting too early at certain sites. In addition, some of the local residents and agency staff believe that some species of plants are locally adapted to the conditions

associated with a particular site. For example, trees raised at the Monument location don’t appear to have the same survival success rates as materials acquired and raised at or near certain project sites.

The project proposed to install permanent enclosures on properties located throughout the upper basin (above Kimberly). Local seed sources would be transplanted throughout the range of climatic variation. Although the focus would be on cottonwood, other species would benefit.

Project Objective: Establish long-term sources of cottonwood and other plant materials by creating reserves in the upper basin.

Project Description:

1. Three locations for future cottonwood reserve areas were identified.
2. Two locations are on properties that the Tribes are in the process of acquiring.
3. A cooperative agreement on the third reserve area (lowest priority) is in the process of being prepared.

Project Monitoring:

Monitoring Objective: Determine the general success of transplanted plant materials from reserve areas relative to the success of those retrieved from the Monument Nursery.

Monitoring Completed:

Project Cost:	Local Cost Share	1,738.00	(26%)
	BPA Contribution	5,000.00	(74%)
	TOTAL	\$ 6,738.00	

Start Date: Summer 1999

Completion Date: Project is active.

PROJECT: SEASONAL CORRIDOR FENCING

Photo 19. Rosebud Creek, a tributary of the South Fork John Day River, showing installation of the temporary electric fence

Background: Permanent riparian corridor fencing has been used for over twenty years in the John Day basin as a stream and riparian restoration technique. However, many landowners are reluctant to participate in the permanent fencing program, but still want to improve riparian condition. Also, while permanent fencing lends itself well to river mainstems and larger tributaries that have a relatively broad floodplain, many landowners believe that its use on smaller tributaries, with narrower valley bottom widths, is limited.

Temporary, seasonal corridor fencing has been suggested as an alternative to permanent fences where those facilities are not applicable. The most appropriate type of temporary fencing appears to be electric fences, which have been primarily used by federal agencies on grazing allotments for riparian protection and by private landowners for pasture fencing.

Project Objective: Improve water quality and fish habitat in tributaries to the John Day River.

Project Description:

1. Electric fence materials, including solar fencers, steel posts, and wire, were procured.
2. Rosebud Creek, a tributary to the South Fork John Day River, was selected as a demonstration stream for application of seasonal fencing and the fence was constructed.

Project Monitoring:

Monitoring Objective: Determine rates of riparian and stream channel recovery and evaluate effectiveness of using temporary electric fence as an alternative to permanent corridor fencing.

Monitoring Completed:

1. Four permanent monitoring stations were installed along the length of stream proposed for fencing. Two stations at either end of the corridor are monitored to evaluate changes outside of the corridor (control).
1. Permanent photopoint locations have been installed and pre- and post-project photographs have been taken.
2. Riparian greenline transects and channel cross sections have been completed.
3. Macroinvertebrate sampling has been completed.

Project Cost:

Local Cost Share	3,106.00	(52%)
BPA Contribution	2,961.00	(48%)

TOTAL \$ 6,067.00

Start Date: June 2000

Completion Date: Project is active.

PROJECT: BEAVER MANAGEMENT PROGRAM

Photo 20 . Basin Creek on the J-Dot Ranch. Beaver reintroduction site prior to release.

Project

Background: Many streams in the John Day basin benefit from the activities of beaver populations. High quality rearing habitat can be contained in beaver ponds, while at the same time these ponds can store considerable amounts of water, ameliorate detrimental effects due to spring runoff, improve riparian condition by flooding and stimulated vegetative cutting, and act as a primary nutrient sink. Beaver activity can also result in less ungulate grazing damage by creating

flooded riparian conditions which discourage grazing use.

Beaver populations have been dramatically reduced from historic levels through past fur trapping and habitat degradation.

However, in parts of the basin suitable habitat exists that remains unoccupied due to the lack of productive populations in adjacent areas that could natural seed these suitable streams. In other parts of the basin, populations have expanded naturally, without a benefit to the stream system (e.g., large mainstem reaches where the beaver are primarily bank residents and do not actively build dams.

Photo 21. Beaver being released on Basin Creek



The beaver management program is an interagency effort to restore beaver populations to areas of currently unoccupied but suitable habitat for the benefit of watersheds, fish, and wildlife populations and habitat. Over ten agencies are involved in this effort, which has identified areas of suitable, unoccupied habitat and relocates beavers from areas where they are causing damage to private lands. Cost share funding is being provided by the Oregon



Photo 23 . Basin Creek on the J-Dot Ranch. Beaver reintroduction site showing impounding of water and enhanced willow growth following release.



Watershed Enhancement Board.

One of the most successful reintroductions has been on Basin Creek, a tributary to Long Creek, within the J-Dot Ranch. Historically, Basin Creek had an extensive riparian community with beaver dams located along its entire length. Based on interviews with the landowner, these beaver ponds contained significant numbers of fish, probably juvenile steelhead and resident redband trout. These ponds were a favorite local fishing spot and, according to the landowner, “gunny sacks full of fish” could be caught from these ponds in a single day. However, the ponds and beaver dams created considerable problems for the landowner by flooding hay meadows and creating marshes where livestock could become trapped and drowned. In response, the landowner had all of the beavers trapped and the dams blown up with dynamite (this was over thirty years ago).

Subsequent high water blew out all of the

Photo 22 . Water leveling device on the T.G. Brown Ranch, South Fork of the John Day River. The PVC pipes keep the stream flow at a constant level, keeping water from flowing out across hay meadows.

beaver dams, incised the stream channel (see Photo 16), removed most of the riparian vegetation, and resulted in almost a complete loss of all the fish production within the ranch streams. In addition, due to changed habitat conditions, the stream went from flowing perennially to intermittently, drying up completely by July on most years. The landowner immediately above the project area also had all the beavers and beaver dams removed and the stream channel changed similarly. This landowner subsequently placed numerous rock check dams within the stream channel, at a considerable expense, in an attempt to halt erosion and return to a perennial stream system. The owner of the J-Dot ranch, however, did not install instream structures, and instead constructed a system of fences which set aside

Transplant Locations:

Basin Creek
Little Pine Creek
Beaver Creek
Widows Creek
Dry Creek
Camp Creek

Basin Creek within a riparian pasture, which could be grazed differently than the upland pastures on the ranch. This resulted in improved riparian condition but a lagging response in the hydrologic function of the stream channel.

Following a presentation on the beaver program to the Grant Soil and Water Conservation District, the landowner approached the John Day Basin Office regarding the possibility of reintroducing beaver to Basin Creek. Following an initial review it was determined that suitable habitat was available and beavers were relocated to the stream from damage areas. Within six months, beavers had constructed dams along a quarter-mile length of stream, which

were actively storing water and flooding the adjacent riparian habitat. Additional transplants were conducted the following year and monitoring of the resource response is ongoing.

Project Objective: Improve water quality, including water quantity, and fish habitat in tributaries to the John Day River.

Project Description:

1. Potential habitats were identified by agency staff and landowners according to preliminary evaluations of historic beaver activity and suitability of habitat.
2. Prospective habitats were evaluated as to their suitability for reintroduction based upon a checklist using the U.S. Fish and Wildlife Service's Habitat Evaluation Procedure.

Photo 24 . Beaver pond on the T.G. Brown Ranch, South Fork of the John



3. Potential transplant populations were identified using prior damage complaint contacts, known high density populations, and a solicitation in the newspaper.
4. Animals were trapped and moved to suitable locations.
5. Structures intended to alleviate beaver damage are installed in suitable locations.

Project Monitoring:
Monitoring Objective:
Determine effectiveness of beaver transplants and improvements in habitat.

Monitoring Completed:
4. Permanent photopoint locations

have been installed and pre- and post-project photographs have been taken.

5. Individual animals to be transplanted are weighed, sexed, and marked prior to release.

Project Cost:

Local Cost Share	20,953.00	(65%)
BPA Contribution	11,065.00	(35%)
TOTAL	\$ 32,018.00	

Start Date: September 1999 Completion Date: Project is active

PROJECT: STREAM GAUGE OPERATIONS



Photo 25. A stream gauging station in the John Day basin.

Project Background:

A considerable number of the John Day Basin Office projects are oriented towards water conservation and the enhancement of instream flows. As part of our monitoring effort, we evaluate streamflow during critical time periods for anadromous and resident fish species. The Oregon Water Resources Department, as part of their streamflow measurement program, operate and maintain stream gauges throughout the John Day basin. The Tribes offered to support one of these gauging stations during the 1999

measurement period as part of our project level monitoring program.

Project Objective: Gather flow information critical to the assessment of baseline condition and improvements due to restoration efforts.

Project Description:

1. The agreement and contract between the Tribes and the Oregon Water Resources Department was amended to provide funding for operations of the Dog Creek stream gauge in 1999.
2. The OWRD operated the stream gauge in 1999 and forwarded corrected data to the Tribes.
3. Streamflow data was entered into the permanent database maintained in the JDBO and evaluated as part of the 1999 monitoring effort.

Monitoring:

Monitoring Objective: None

Monitoring Elements:**Project Cost:**

Local Cost Share	1,580.00	(26%)
BPA Contribution	4,600.00	(74%)
TOTAL	\$ 6,180.00	

Start Date: January 1999 Completion Date: December 1999

PROJECT: MONUMENT NATIVE PLANT NURSERY

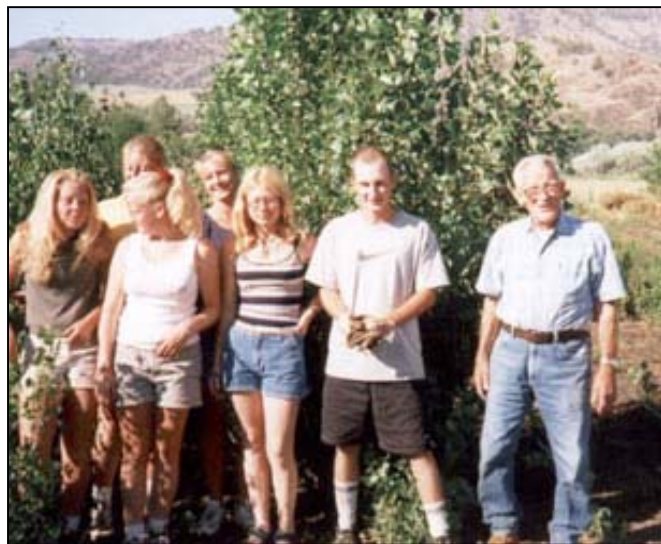
Background: The Monument Nursery is currently the only local source available to provide plant materials used in agency restoration programs. The nursery is well established in the basin with sufficient land, water, and labor to increase the nature and extent of available materials. However the current cost of some materials prohibits widespread use for conservation purposes.

In 1999, the Monument Nursery distributed approximately 4000 units of riparian plants.

Photo 26. The plant nursery at Monument, Oregon. Maintained by the Monument Soil and Water Conservation District and North Fork Watershed Council.

materials used in restoration activities; provide educational opportunities for the Monument School; reduce costs of conservation plants offered to local landowners; and improve basin riparian condition by increasing the extent of conservation trees planted.

Objective: Create a local source for native/local plant

**Project Description:**

1. Prepare and approve a contract and interagency agreement between the Tribes and Monument SWCD.
2. Develop plant materials collection and sale contract templates.
3. Purchase supplies and equipment for the collection and care of native plants in the nursery.

Photo 27. The Oregon Youth Conservation Corp and Jack Cavender, chairman of the Monument Soil and Water Conservation District at the Monument Nursery

Project Monitoring:
Monitoring Objective: None

Monitoring Completed:

Project Cost:

Local Cost Share	316.00	(11%)
BPA Contribution	2,500.00	(89%)
TOTAL	\$ 2,816.00	

Start Date: June 1999

Completion Date: October 2000

PROJECT: 1999 MONITORING EFFORT



Photo 28. A redband trout (*O. mykiss*) tagged with both a Floy® Anchor Tag (under dorsal fin) and a VI Alphanumeric tag (in perocular tissue behind eye)

Project

Background: A consensus water quality monitoring plan is being prepared for the John Day basin. In the interim, an annual plan is prepared which includes evaluations of completed, proposed, and planned restoration projects. Evaluating completed projects is critical to assessing the biological benefits of the project as well as for effective planning of future activities.

The monitoring program evaluates

projects at varying levels. While each project is evaluated and monitored to a certain extent, some projects or project types receive a greater level of monitoring dependent upon factors such as level of activity, expected biological response, resource issues proposed to be addressed by the project, and representative nature of project to other project types. For example, a return flow cooling project may be monitored for water temperatures, while a permanent diversion may be monitored for riparian vegetation and stream channel condition.

At a minimum, each proposed project has a permanent photopoint installed, pre- and post-project photopoints taken, and a GPS location marked on the GIS project location map. In addition, a representative sample of projects are monitored as follows:

1. permanent diversions are monitored for channel structure, riparian vegetation, and fish passage.
2. return flow cooling projects are monitored for water temperatures and river thermal profile.

3. infiltration galleries are monitored for riparian vegetation and channel condition.
4. riparian corridor fences are monitored for channel condition, fish production, macroinvertebrate production, and riparian condition.
5. other projects are monitored according to resource objectives and information needs.

Project Objective: Improve assessments of completed projects and evaluate to a sufficient level in order to assist with future planning efforts.

Project Description:

1. Amend or revise the 1998 annual monitoring plan to incorporate 1999 projects as necessary.
2. Implement the monitoring plan.
3. Prepare annual monitoring and individual project monitoring assessment reports.

Project Monitoring:

Monitoring Objective: Varies by project.

Monitoring Completed:

1. Permanent photopoints were installed and pre- and post-project photographs were taken at the proposed project locations.
2. Monitoring stations to assess changes in channel morphology were installed at the St. Clair Seasonal Riparian Corridor (4), St. Clair Permanent Riparian Corridor (4), Crown Ranch Diversion, Morris/Pike Diversion, Rudishauser Infiltration Gallery, Lemon Diversion, and Holmes Diversion projects.
3. Monitoring Stations to evaluate changes in riparian condition were installed at the St. Clair Seasonal Riparian Corridor (4), St. Clair Permanent Riparian Corridor (4), and Oxbow Ranch (5) projects.
4. Snorkel surveys to assess gross abundance and community composition were conducted at the Oxbow

Photo 29. Conducting snorkel surveys on the South Fork John Day River (St. Clair Ranch)



- Ranch, St. Clair Permanent Riparian Corridor, and Holliday Return Flow Cooling project reaches.
5. A mark-recapture study to evaluate gross movement patterns and passage over diversion structures at the St. Clair project area was started.
 6. Macroinvertebrate samples were collected at the Oxbow Ranch project area.
 7. Over 45 thermal loggers were installed throughout the basin to evaluate stream temperatures.

Project Cost:	Local Cost Share	6,618.00	(50%)
	BPA Contribution	6,724.00	(50%)
	TOTAL	\$ 13,342.00	

Start Date: June 1999 Completion Date: December 1999